

**APPENDIX A.** Basal area increment, ring-width indices, soil chemistry data, and climate data across all sites.

TABLE A1. Number of significant negative growth trends (percentage of trees) after most recent breakpoint for 90%, 95%, 99% and 99.9% confidence levels. Random walk trends are trends with no significant directionality for the given confidence level.

Significance Level	Negative	Random Walk	Positive
90%	151 (62%)	74 (31%)	17 (7%)
95%	139 (57%)	90 (37%)	13 (5%)
99%	111 (46%)	123 (51%)	8 (3%)
99.9%	85 (35%)	153 (63%)	4 (2%)

TABLE A2. Pearson correlation coefficients ( $n = 18$ ) between all sites' soil chemistry variables (exchangeable Al, base saturation, and exchangeable Ca) and mean BAI for 1970-2008.

Horizon	Al	BS	Ca
Oe	-0.01	0.05	0.16
Oa	-0.21	0.22	-0.01
A	-0.51*	0.41	0.42
Upper B	0.27	-0.03	0.12
Lower B	-0.06	0.02	0.23

\* $p < 0.05$

TABLE A3. Site-averaged A horizon soil chemistry variables: Exchangeable aluminum (Al; cmol<sub>c</sub>/kg), base saturation (BS), exchangeable magnesium (Mg; cmol<sub>c</sub>/kg), exchangeable calcium (Ca; cmol<sub>c</sub>/kg), and pH.

Sites	Al	BS	Mg	Ca	pH
7001	2.05	0.54	0.51	3.62	3.95
9006	3.10	0.36	0.42	2.04	3.89
17002	2.47	0.27	0.21	1.15	4.21
22019	2.87	0.51	0.48	3.84	3.79
24001	0.12	0.96	1.87	24.74	5.20
26008	5.63	0.18	0.29	1.08	3.96
27019	3.92	0.24	0.31	1.14	4.03
28030	1.06	0.57	0.53	3.55	4.15
28037	3.13	0.49	0.71	3.39	4.42
29012	1.31	0.41	0.35	2.16	3.97
30009	4.02	0.33	0.49	2.69	3.81
12003/13008	2.57	0.43	0.46	2.94	3.94
31009/35014	1.32	0.31	0.33	1.16	3.77
AMP	6.05	0.48	0.58	5.31	4.62
N1	1.32	0.75	0.74	8.22	4.37
NW	1.06	0.77	1.05	6.06	4.48
S14	1.82	0.78	1.31	12.45	4.70
WF	2.24	0.65	1.12	11.10	4.21

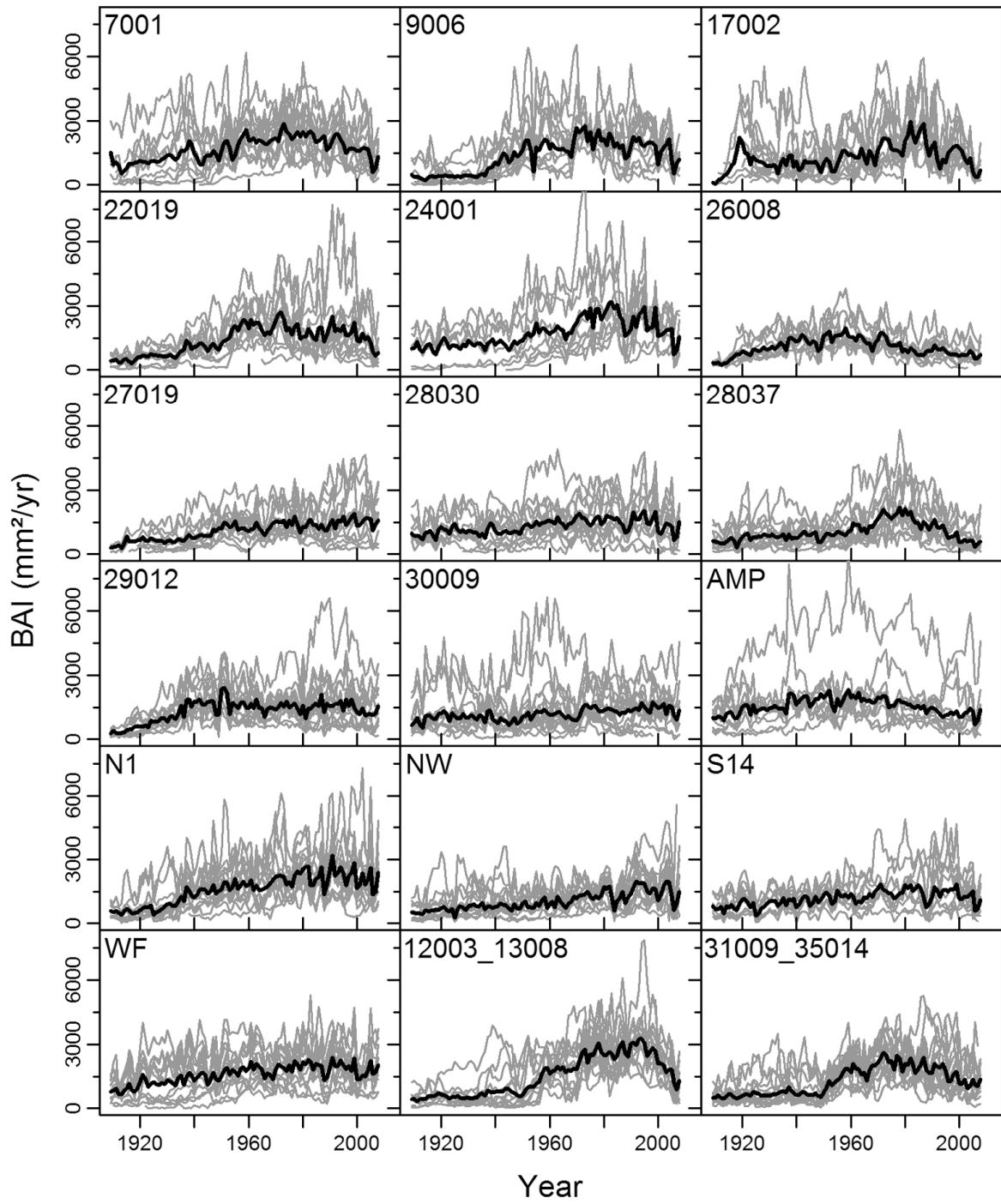


FIG. A1. Annual basal area increments from each tree (grey lines) and running annual mean for each site (thick black line) from 1909-2008.

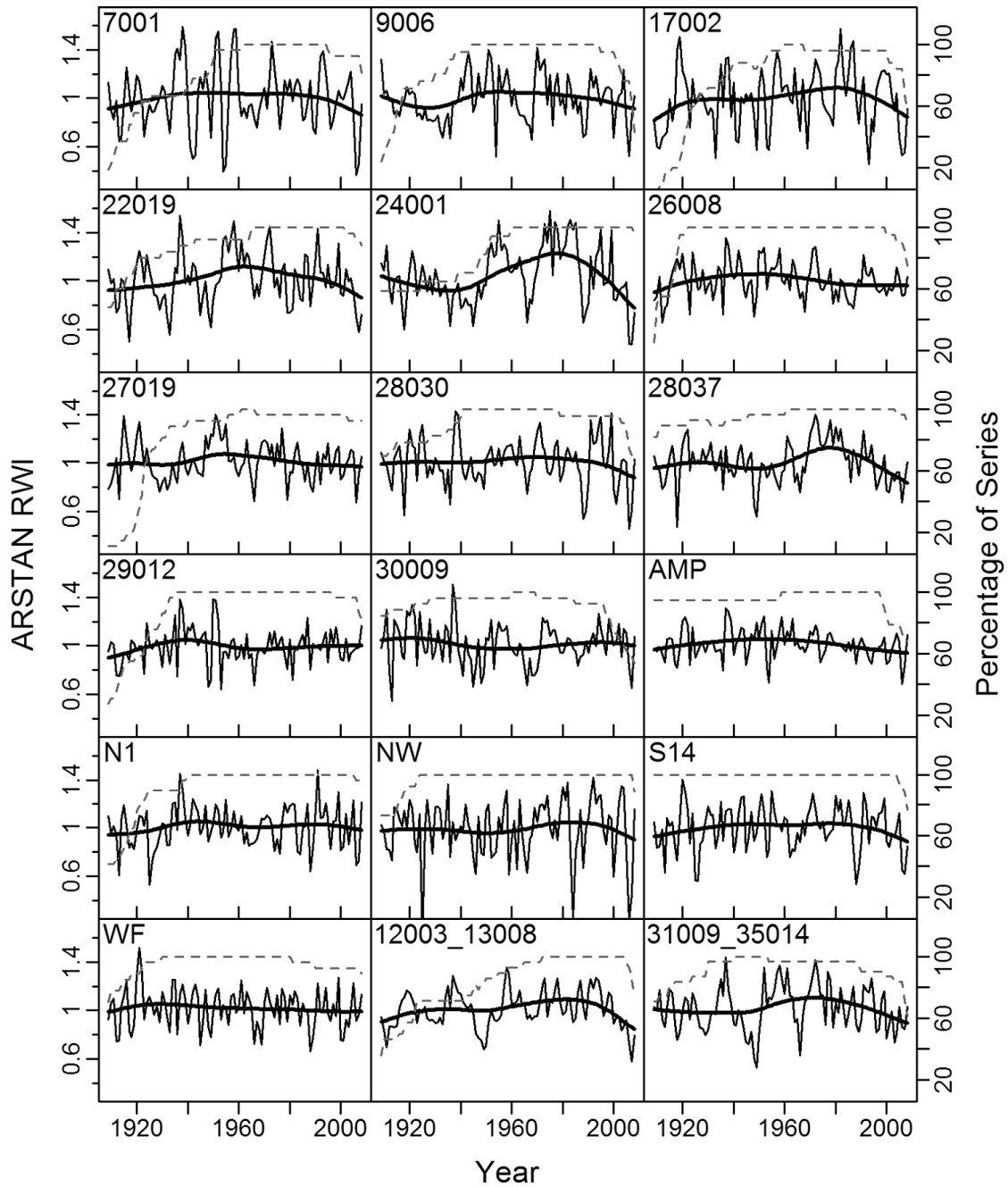


FIG. A2. Detrended ARSTAN chronologies for each site (thin black line) fit with a cubic smoothing spline ( $df = 5$ ; thick black line) from 1909-2008. Sample depth (dashed line) plotted as percentage of total series for each site.

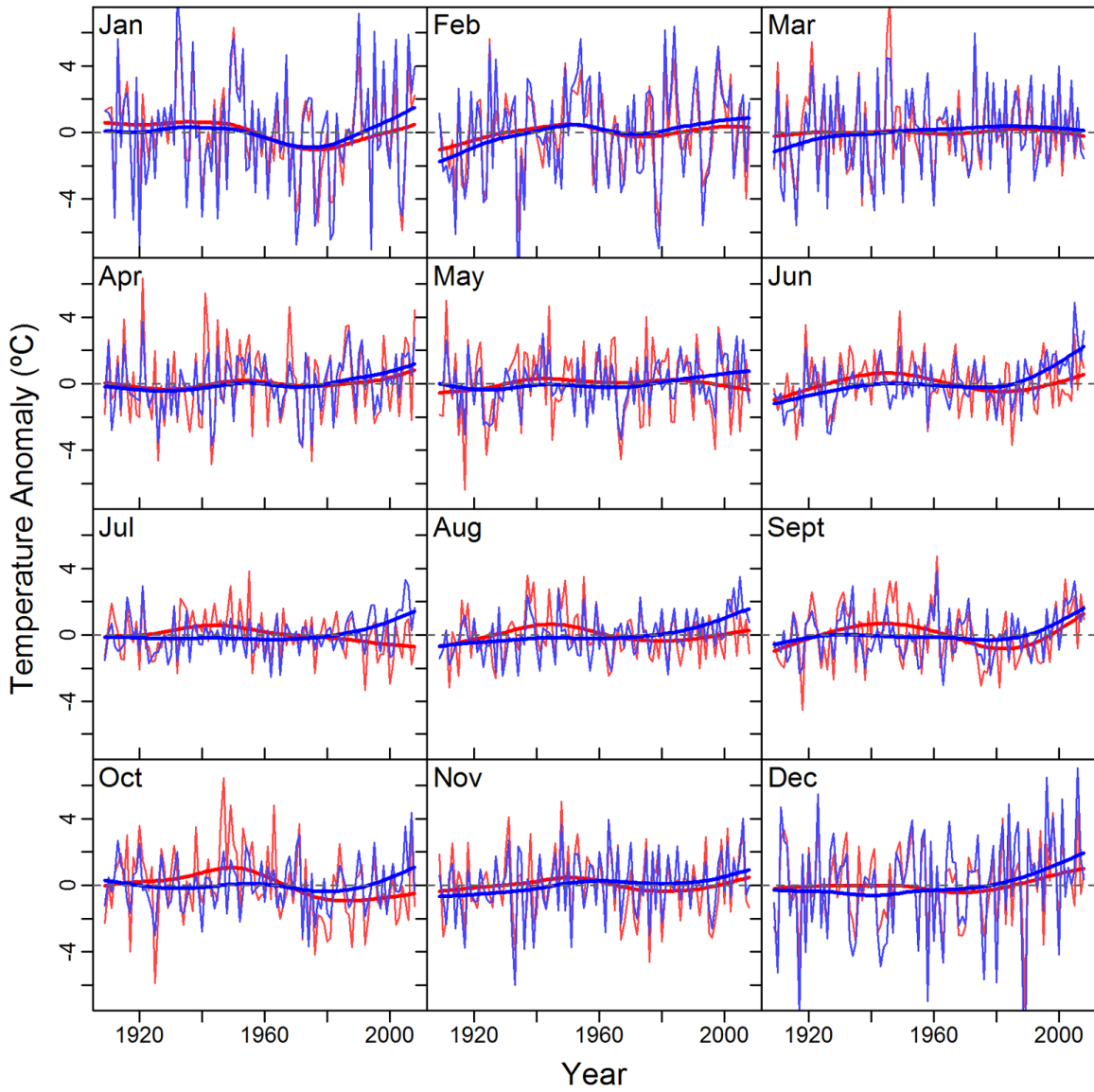


FIG. A3. Annual averaged PRISM monthly maximum (red lines) and minimum temperature anomalies (blue lines) from 1909-2008. Both are fit with a cubic smoothing spline ( $df = 5$ ).

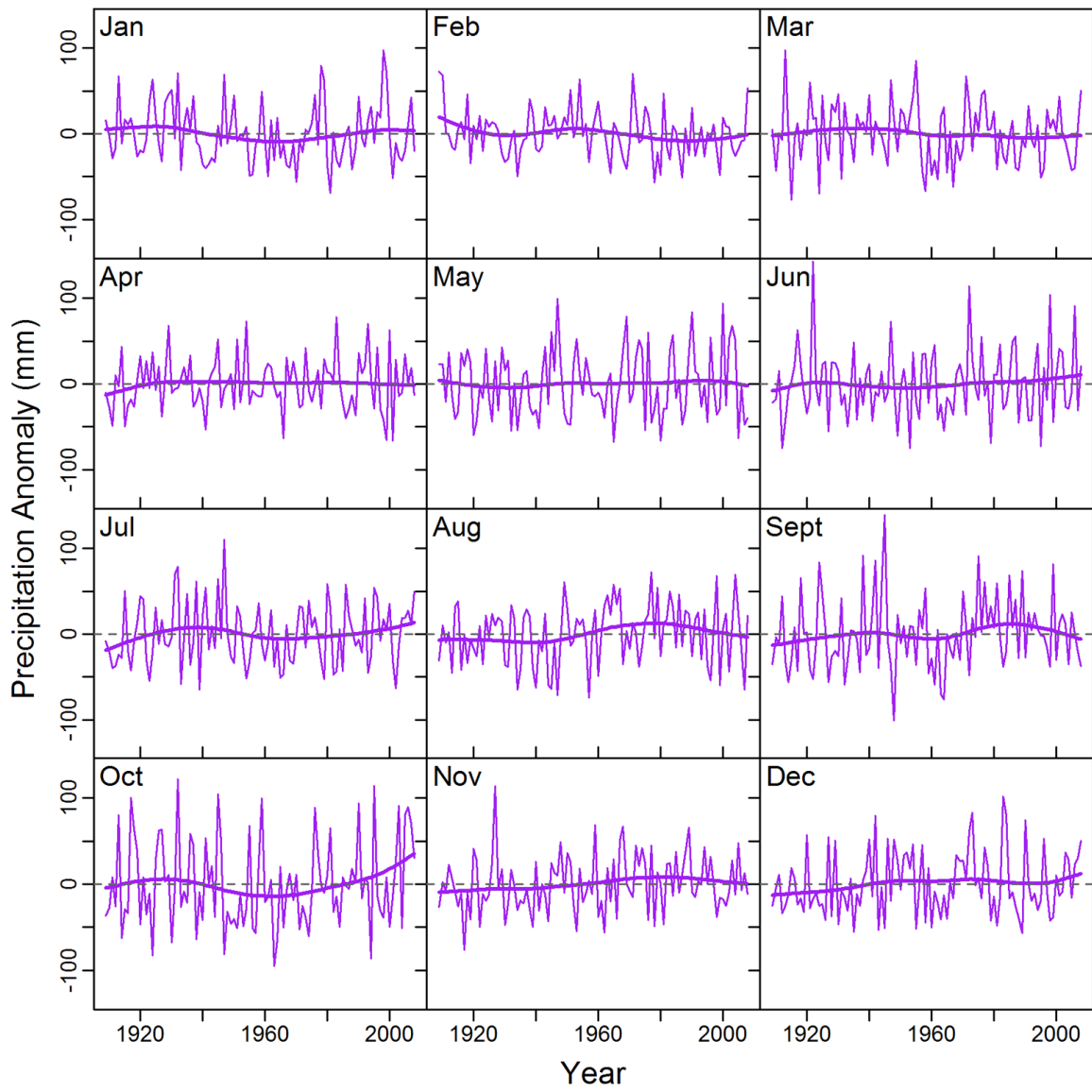


FIG. A4. Annual averaged PRISM monthly precipitation anomalies (purple lines) from 1909-2008 fit with a cubic smoothing spline (df = 5).

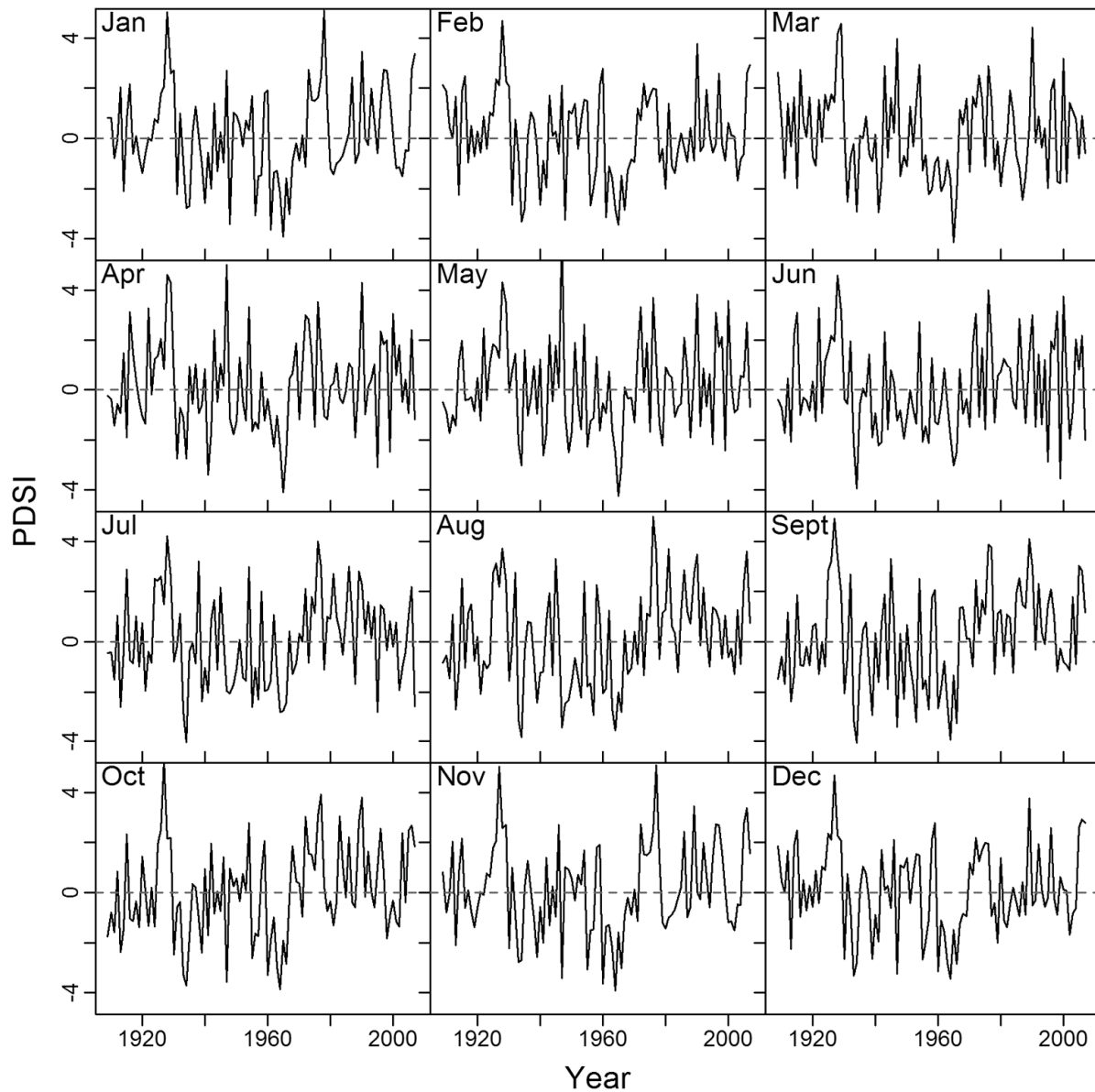


FIG. A5. National Climatic Data Center’s monthly Palmer’s Drought Severity Index (PDSI) for New York State, Northeastern Plains division ([www.ncdc.noaa.gov/](http://www.ncdc.noaa.gov/); Diamond et al. 2013) from 1909-2008.

LITERATURE CITED

Diamond, H. J., et al. 2013. U.S. Climate Reference Network after one decade of operations: status and assessment. *Bulletin of the American Meteorological Society* 94:489–498.